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ARCHAEOLOGICAL EXPEDITION AT AKSUM (ETHIOPIA) OF THE UNIVERSITY OF NAPLES "L'ORIENTALE". 2014 FIELD SEASON: SEGLAMEN

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Introduction[1]

In November/December 2014 the Italian Archaeological Expedition of the Università degli Studi di Napoli "L'Orientale" (UNO), Napoli, Italy, co-directed by Rodolfo Fattovich, Andrea Manzo and Luisa Sernicola, conducted the twentieth field season of investigations in the region of Aksum, Tigray, northern Ethiopia, the fifth at the site of Seglamen[2].

The site, located about 15 km to the south-west of Aksum along the Aksum-Adet road, was first recorded and partially excavated in the early 1970s (Bernard *et alii* 1991; Ricci and Fattovich, 1987; Schneider 1976), and repeatedly surveyed by members of the UNO expedition and local archaeologists within the framework of the World Bank Ethiopian Cultural Heritage Project (Fattovich and Takla Hagos 2006).

The UNO/AU project is aimed at investigating a 100 sq km transect along the Negus/Haselo river valley from Addi Hankara (Lahlay Machew *woreda*) to the north of Adet (Adet *woreda*) with the territories around the modern villages of Medogwe, Seglamen, Merina and Adet as major areas of investigation (Fig. 1).

Main goals of the project are to provide: 1) a reconstruction of the cultural and environmental history of the region to the south-west of Aksum, and 2) a detailed archaeological map of this region for the cultural heritage management of Central Tigray (Fattovich *et alii* 2011, 1, 2012, 112). This transect has been selected as the Negus/Haselo river valley represented an important traditional exchange route linking Aksum and the Tigrean highlands to the Tekeze river in the south-west and, through this, to the southern regions of the Ethiopian plateau (Fattovich *et alii* 2011, 1, 2012, 112; Sernicola and Phillipson, 2011, 201).

Description of field activities

Field activities carried out in 2014 included archaeological survey and excavations (Fattovich *et alii*, 2011, 2-3; Fattovich *et alii*, 2012, 113-116), and geophysical prospections.

Survey (D. Capra)

Surface reconnaissances were mostly conducted in the northern sector of the study area, at Medogwe, Addi Holahul and Mezber. A preliminary exploration of the southern sector of the study area was also attempted by conducting surface reconnaissance in the area to the north of New Adet.

Medogwe

The small village of Medogwe, is located between Aksum and Seglamen. In this area, the presence of an ancient cemetery was recorded by Gezau Hailemaryam and Henri de Contenson (de Contenson 1961, 15-23; Gezau Hailemariam 1955, 50-51). Following the general description and the sketches of the area provided by Henry de Contenson, the site was located and recorded as MDG 1 by the UNO/AU expedition in 2012 (Sernicola, 2014, 480-481).

The site is located at 14°08'78.00" N - 38°66'82.63" E, on top of a small, terraced hill along the eastern edge of the Haselo river, and is characterized by an high quantity of ceramics

[1] For a detailed description of the activities and results from 2010 to 2014 see also the complete reports at http://www.unior.it/ateneo/10892/1/aksum-rapporti-di-scavo.html

[2] Members of the 2014 expedition were Prof. Rodolfo Fattovich, archaeologist and research director, Dr. Luisa Sernicola, archaeologist and field director, Mr. Marco Barbarino, surface surveyor, Mr. Diego Capra, assistant archaeologist, Ms. Gabriella Giovannone, archaeologist and ceramic analyst (UNO, Italy); Dr. Laurel Phillipson, lithic analyst (UK); Ms. Rachel Moy, ceramic analyst (University of California, Los Angeles, USA), Mr. Assefa Getaneh, geophysicist (Addis Ababa University, Ethiopia), Mr. Guish Assefa, interpreter, (Ethiopia). The Ethiopian Authority for Research and Conservation of the Cultural Heritage (ARCCH) was represented by Mr. Degsew Zerihun, the Regional Office of Culture and Tourism of Makalle, by Mr. Gidey Gebregziabher.The fieldwork has been organized as a field school for undergraduated archaeology and heritage management students of Aksum University[2] (AU) and MA archaeology and heritage management students of Addis Ababa University (AAU). The field school with the students of AAU is conducted within the framework of the "Italian contribution to the education sector development programme (ESPD) - Post Graduate Program (PGP)".

scattered on surface and eroded down along the hillslopes.

In 2014 the third survey has been conducted in this area, which allowed to identify, locate and record spots with traces of diverse functions and activities, including occupation areas and a significant lithic workshop (Figs. 2-3).

Future researches, including test excavations, could help to solve the problem of the datings of the sites that so far are only suggested by surface potsherds and lithic technology.

Addi Holahul SG 5

The site of Addi Holahul (SG 5) is located approximately 1 km to the south of the modern village of Seglamen and east of the main road that from Aksum goes to Adet. The site was first identified by Guish Assefa Aregay in 2010; on that occasion a preliminary survey was carried out by Laurel Phillipson, Luisa Sernicola and Guish Assefa Aregay (Fattovich *et al.*, 2011, 2012). In 2013 a more systematic survey has been started by Diego Capra, Guish Assefa Aregay and Zenash Kefyalew (Sernicola and Phillipson 2015), which allowed to provide intensive collections of the exposed materials. Investigations at this site have been resumed in 2014 in order to determine the overall extension of the site, which resulted to be of about 60 ha.

Mezber

This *locus*, coded as SG 1.18 is located about 550 m west from the core area of site SG1. The extension of the surveyed area is about 0.94 ha. A selective collection has been carried out in 2014 at this locus which released knapped stones including cores, flakes and fragments. No pottery has been found. The area deserves further investigations to outline its extension, to collect more lithic materials for a typological description and to clearly define if it part of site SG 1.

New Adet

New Adet is situated to the south of the study area. The aim of preliminary exploration of this area is to collect evidence of possible relations between site SG 1 and the regions to the south of it for a future southward expansion of the project.

Two areas have been preliminarly explored in 2014.

The first one is located at Seka, near a school at 13° 09’ 41,50” N - 38° 64’ 53,50” E, east of the main road. Observed materials mostly include chert and quartz cores and flakes. Abundant chert outcrops have been also noticed in the proximity of the town, in the fields alongside the main road. This could explain both the high concentrations of knapped stones found in the fields surrounding the school and the large extension of the area where archaeological materials have been observed. Preliminary observations suggest that the site might have been used for a long time as several types of knapped stones are represented, which may correspond to different periods.

The second area is located at Addi Selam, near the church of Medane Alem, at 13°89’24.62” N - 38°62’35.63” E. In this area the lithic materials are less abundant than at Seka, but again there are chert outcrops in the fields. The amount of knapped lithics increases going towards the Addi Selam ridge, crossing some fields currently used for agricultural purposes and bounded by unmortared stone walls, or following a path which leads to a school and a little hamlet close to the escarpment before the Addi Selam ridge. Evidence of stone working was observed close to the chert blocks. Lithic materials included chert flakes, cores and proto-cores. Close to the hamlet and the school, abundant orange potsherds have been also noticed.

Possible future systematic investigations in this area may contribute to better define the extension, chronology and cultural affiliation of these sites and contribute to outline the relationships between this area and the regions to the north of it.

Excavations[3]

In 2014, archaeological excavations concentrated at site SG 1, a “Pre-Aksumite” village extending for about 7 hectares on a cultivated terrace at the easternmost edge of the modern village of Seglamen. The core of the site encompasses the localities of Amda Tsion and Mogareb, where remains of a settlement and of a cemetery had been respectively identified and partially excavated in 2010, 2011 and 2012 (Fattovich 2012; Sernicola 2014; Sernicola and Phillipson 2015; Sernicola *et alii*, 2013).

[3] As in the previous seasons, stratigraphic excavations have been conducted according to the procedures established by Harris (Harris 1979).

In the previous seasons three architectural phases alternated to intermediate occupations were identified in the stratigraphic sequence at Amda Tsion. They have been recorded as Phase I, II and III from the bottom of the sequence to the surface, respectively. In 2014, two excavation units 10 × 10m in size (Seg IX and Seg X), already partially investigated in 2013, were reopened in this area order to continue their excavation. In the same area, about 30 m east of trenches IX and X, a further excavation unit has been established (Seg XV), in an area were micromorphological observations suggested the occurrence of a thick archaeological deposit.

At Mogareb, in the area of the ancient cemetery, a new excavation unit, Seg XIV (10x10 m), was established to the west of Seg XI, in order to acquire additional information on the funerary practices performed at the site.

Seg IX-X (M. Barbarino)[4]

Excavations at these trenches brought to the light an external living floor associated to the large building of Phase III recorded in the past seasons, and traces of additional structures belonging to Phase I and Phase II. The remains of three burials, most likely related to a post-Phase III occupation of the area, were also recorded. The bodies, buried in contracted position in very simple shafts, had no grave goods associated with them; only one had metal anklets.

Seg XV (L. Sernicola)

This excavation unit was opened in the area of Amda Tsion, at the eastern edge of the uppermost cultivated terrace, in the proximity and overlooking the area were the Post-Aksumite rural house excavated by Ricci and Fattovich in 1974 was located (Ricci and Fattovich 1987). The excavation was aimed at better understanding the organization and development of the ancient settlement in this area.

Excavations at Seg XV have uncovered the remains of a large multi-room building so far only partially exposed. The eastern and western walls of the structure (SU 14 and SU 55) are quite thick (1,32 and 1,07 m respectively) while the others range between 0,70 and 0,98 m. Their construction technique and general orientation are similar to those of the building of Phase III unearthed between 2010 and 2014 at Seg II-V-VI-VIII-IX-X-XII-XIII (Fattovich *et alii* 2011, 2012; Sernicola 2014; Sernicola and Phillipson 2015; Sernicola *et alii* 2013). The walls defined five rooms, square or rectangular in plan, of various size and orientation. Evidence of a stairway abutting the eastern side of the easternmost NW/SE oriented wall (SU 14) indicate that this was an external wall and that one entrance to the building was at least located on this side.

Only two (Room 1 and Room 2) out of the five rooms identified have been investigated; of these, only one (Room 1) has been entirely excavated up to the bedrock.

Room 1 is a rectangular chamber with its major axis having a NE/SW orientation. Excavations in this room revealed clear evidence of two levels of occupation (level 1 and level 2), the later one, perhaps occurred after an earlier collapse, showing the re-erection of the southern wall on top of the earliest one. The living floor of level 1 consisted of a thin layer of compacted soil directly placed on top of the bedrock. The few ceramics contained in this layer show fragments of typical pre-Aksumite red and orange wares mixed to a so far undocumented group of black coarse ware[5].

The thick stones platform resulting from the collapse of the walls of level 1 was presumably used as a foundation for the living floor of level 2, on top of which another collapse was recorded. The living floor provided ceramics (with a predominance of black, brown and gray coarse ware), grindstones and related objects, very few lithics and one metal anvil.

Later, the organization of this area of the excavation unit slightly changed. A second architectural phase is recorded with the erection of four new walls, smaller than the previous ones and with a different construction technique (SU 4, SU 5, SU 6 and SU 44). This is a phase of re-use of this space after the abandonment of the room (and possibly of the entire building), during which a new, smaller structure was erected on top of the remains of the previous one. The structure should have had one storey, with the roof supported by two wooden poles placed in the northern sector of the chamber. Ceramics assemblage from this context include

[4] The study and description of excavation at these trenches is still in progress.

[5] For a comprehensive description and overview of the ceramics from Seg XV contexts see R. Moy in this paper.

mostly brown coarse ware and very few fragments of red and orange ware.

In Room 2, a rectangular chamber immediately to the north of Room 1 and parallel to it, the remains of a living floor have been detected. Also in this case, typical "Pre-Aksumite" red and orange wares were associated to fragments of black, brown and gray coarse ware.

After the collapse of the structure of the second architectural phase, two small structures where erected in the area. Finally, a Post-Aksumite frequentation of this spot is indicated by the presence of Post-Aksumite ceramics on top of the latest collapse.

Seg XIV (G. Giovannone)

Excavation unit Seg XIV was located in the area of Mogareb, in the north-western sector of site SG1, were archaeological investigations conducted in 2010 , 2011 and 2013brought to light the remains of a cemetery so far represented by eight tombs and nine pits or votive deposits. In order to verify the possible occurrence of others tombs in the area and to understand their distribution and typology a new excavation unit (10 x 10 m , N/S oriented) was opened immediately to the West of Seg XI.

Excavations at the cemetery brought to the light 15 tombs, 3 with an associated stela (Tombs 12, 16, 18), 11 without stela (Tombs 8, 9, 10, 11, 13, 14, 15,17, 19, 20, 21) which fall in the typology outlined in the previous seasons (Sernicola and Phillipson 2015); 1 tomb (Tomb 22) has been only partially exposed and excavated thence, at the moment, can't be attributed to a specific type.

Five possible pits have been detected and excavated. These resulted to be entirely natural, with no traces of archaeological materials thus can be interpreted as pockets of soil accumulation in natural depressions of the bedrock.

Grave goods included abundant ceramics, mostly Orange Coarse Ware and Black Topped Orange cups, beakers, bowls and jars, attributable to the so-called "Pre-Aksumite" culture, as well as ornaments (copper alloy earrings, copper alloy, stone, glass paste and glass beads), copper alloy and ceramic stamp seal and a clay model of a rural compound (Tomb 12) (Fig. 4).

Ceramics (R. Moy)

During the 2014 field season, ceramics from the settlement were analyzed from trenches Seg IX-X and XV. Not all the materials from each stratigraphic unit have been analyzed in detail due to time constraints, but the majority of analyzed sherds come from Seglamen X and XV[6].

Seg XV

In level 1of the first architectural phase recorded in Room 1, only red, brown, and black fabrics are found. From the wares in this unit, the largest groups are Black Polished Coarse Ware (BPCW), 27%, and Brown Micaceous Fine Ware (BrMFW), 18%. 14% are black topped wares. Most of the fragments are medium to high burnish on both surfaces. Decoration is represented mostly by incising and combing. Additionally, this phase has relatively more scraping on the exterior than other units. The upper part of the collapse covering level 1 living floor is visibly different from the lower. It includes more black and grey wares sometimes with unusual incised decoration (Fig. 5). The lower part and the living floor have similar wares to SEG X, that appears to be pre-Aksumite in date based on its ceramic assemblage.

In level 2 of the first architectural phase recorded in Room 1, black, brown, and grey fabrics are prevalent. 23% of the wares are Black Polished Coarse Ware. 23% are Grey Coarse Ware. 10% are Black Topped Brown Fine Ware (BTBrFW). 10% are Red Orange Coarse Ware (ROCW). 21% of all fragments are Black Topped Ware (BTW). Nearly all fragments have medium to large white mineral inclusions. This phase has many examples of vessels with rough interiors and burnished exteriors. Most of the decoration is done in incised lines, and most of these examples are globular jars in grey and black wares. They are often incised or combed horizontal lines around the rim or line decorative motifs on the shoulder and on the body (Fig. 6).

In architectural phase II, most of the fabrics are brown. There is only one orange and one red fragment respectively. 36% are Brown Micaceous Fine Ware. 14% are Black Topped

[6] Ceramics were classified following Fattovich 1980, as established during previous field seasons by Dr. Michela Gaudiello (Fattovich *et alii* 2011; 2012; Sernicola 2014; Sernicola and Phillipson 2015; Sernicola *et alii* 2013).

Ware. The majority of sherds have white mineral inclusions. Decoration is mainly incised.

A few more units date to after the collapse. The fragments from these units are mostly coarse wares. Many of the fragments are decorated with impressions made by both fingers and tools. One brown fragment from this unit features an incised cross on the interior of the vessel near the rim, on a plate likely used for cooking enjera. Additionally in the interface between SU 3 and SU 31, an almost complete Aksumite high necked globular bottle was uncovered.

Seg IX-X

For Seglamen IX and Seglamen X ceramics from units that were assigned phases were only analyzed in depth. These phases represent the corresponding architectural phases of the areas' buildings. In general, the ceramics from most stratigraphic units appear mixed in date. Only some of the ceramics are similar to those excavated in earlier excavation seasons and appear pre-Aksumite in date.

In Phase I, 33% of all the fragments are black topped. 22% are Brown Coarse Ware. Several examples have impressed decoration of small circles likely made with a twig or piece of bone.

Phase II is represented only by a single stratigraphic unit, 186. Compared to other units, the fragments appear uniform in character. 40% of the fragments are Red Polished Coarse Ware. This phase contains numerous examples of exterior stick burnishing. The fabric and form of the fragments seem very similar to the cemetery.

The excavator considered an interface between Phases II and III, and thus labeled it Phase II-III. Black, brown, and black topped wares are frequent in this phase. Black topped wares represent 20%. Black Polished Fine Ware and Brown Coarse Ware each make up 20%. Similar to phase II examples of stick burnishing are frequently present. One interesting painted fragment is decorated with red and white paint similar to examples from Yeha (Fig. 7). As with other phases, there appear to be some mixing; however, stratigraphic unit 201 seems uniform in character and displays many pre-Aksumite characteristics.

Phase III is characterized by a large amount of Black Polished Coarse Ware, 12%, as well as, Grey Coarse Ware, Black Polished Fine Ware, Red Orange Coarse Ware, and Brown Micaceous Fine Ware. Each of these groups make up 11% of the total assemblage. Several examples from the Black Polished fragments have incised line decoration. 9% of the fragments have impressed decoration. There are several interesting pieces from this phase. One is a fragment of Red Polished Coarse Ware has vertical grooving, which is a distinctive feature of the Early and Classic Aksumite periods (Fig. 8). One fragment has a unique incised pattern resembling a plant. Another fragment from the same unit and square has vertical lines crossed perpendicularly with scraping. Besides the example of vertical grooving, another Red Polished Coarse Ware piece was found pointing to a later date. This body sherd has a clear impression of a cross in a circle about 40 mm in diameter.

The phase III-IV interface consists of 50% Black Topped Ware. Black Topped Brown Polished Coarse Ware, Black Topped Red Polished Coarse Ware, and Grey Ware each consist of 17% of the total sample. All sherds from this group have white mineral inclusions. One interesting example was an open Grey Coarse Ware vessel with white paste filling in a vertical line.

Phase IV consists mainly of fragments of bowls and other domestic wares. About 30% were Brown Fine Ware fragments. Brown Coarse Ware and Orange Ware each make up 13% of the assemblage. Black Topped Wares form less than 10%. 27% of the examples had combed decoration. Most of these examples were on red or brown wares.

Additionally several intrusive burials were uncovered in Seglamen X and IX and were not included in the phasing of these trenches. The stratigraphic units from these burials that yielded ceramics only include 183 and 184. Brown Coarse Ware and Brown Micaneous Fine Ware each represent 30% of the total fragments. Nearly all fragments have quartz inclusions. Combing decoration is common in both wavy and straight lines usually on brown fabrics.

Lithics[7] (L. Phillipson)

The main result of study of the lithic artefacts excavated in 2014 is to confirm the conclusions made in the 2013 report (Sernicola

[7] See the lithics reports for Seglamen 2011, 2012, and 2013 (Fattovich *et alii* 2011; 2012; Sernicola 2014; Sernicola and Phillipson 2015; Sernicola *et alii* 2013) for explanations of terms and conventions used in this report, description of core reduction techniques and bibliography.

and Phillipson 2015), that the principal economic activities at Seglamen in all periods were agriculture and the processing of grain crops and the processing of cattle hides. While a few finds of stone hoes may relate to the cultivation of small fields, perhaps for non-cereal crops, the presence of numerous worn out replaceable components of harvesting knives and rectangular Levallois-style cores, which were the chief, but not the only, means of producing such flakes, attest to a large scale of grain growing and grain harvesting (Fig. 9). A discrepancy between most of the recognised knife components being of obsidian while most of the cores capable of producing such flakes are of chert and other materials is explained by the greater value obsidian, which must have been imported as it is not available in the immediate locality. Instead of being discarded, obsidian cores that were too small to produce additional rectangular flakes continued to be worked to produce smaller bladelets and were only discarded once their potential was fully exhausted.

Numerous grind- and topstones from all phases attest to the grinding of both soft and hard grains, plus some grinding of clay, pigments and minerals for other purposes. Both the quantity of grindstones and the very large size of a few examples suggest that grain-processing may have been conducted at more than a domestic level. Whether this would have amounted to communal or to commercial production is not apparent. The presence of handstones with a central pitted depression surrounded by a rubbed and burnished area gives evidence that a cooking method was used like that to bake *injera* on hot *mugogo* in present-day Tigray. Others of the many handstones recovered from Seglamen resemble those used in the manufacture of *mugogo* to give them a final coating of red clay slip (Figs. 10 - 11).

Handstones were used in every stage of processing hides and skins from the first rough cleaning of cowhide to the delicate final burnishing of vellum. A near total absence of utilised knapped scrapers from all phases of the Seglamen lithics assemblages is noteworthy. In pre-Aksumite, as in the Aksumite, lithic assemblages handstones and burnishers, particularly those of hard and/or porous stone - crystal quartz, vascular chalcedony and vascular basalt - probably supplemented by metal knives, served similar functions to those of knapped scrapers in many East African Late Stone Age assemblages. The cultural implications of this difference has yet to be researched. Well-published examples of the use of lithic scrapers by some cultural groups in southern Ethiopia do not provide the only ethnographic analogy for hide working. In northern Ethiopia in the recent past and perhaps still today handstones were used for this purpose.

Another notable deviation from what would constitute an expected or conventional East African Late Stone Age or Iron Age lithic assemblage is in the use of small backed crescents, frequently of obsidian, occasionally of chalcedony (Fig. 12). Very many of these have clear evidence that they had been used as small knives, hafted or finger-held, frequently with sufficient pressure to break off a small portion of their sharp tips. A likely use of these knives may have been in the production of fine leatherwork. Some may have been used for personal grooming and for similar tasks where a particularly sharp edge was required. A few crescents have been found close to human interments, though less frequently so than was the case at sites on Beta Giyorgis (Phillipson 2009). I have found no evidence that Seglamen crescents were used as barbs or points for arrows.

The recovery of a unique flake point with a serrated tip highlights the fact that this was an agricultural economy that from its inception gives little if any evidence of hunting activity. From all levels, only 5 triangular flakes were recovered whose sizes and shapes suggest they could have been used as arrow or spear armatures. The most probable of these [Seg XIV SU 24] is of chert. It has minute serrations on the distal portion of both lateral edges, which have been worn by repeated use probably as a stabbing implement. three others, including an obsidian example [Seg X SU 175], had been used as knives. None had any traces of the type of impact scars that would be expected from use as an arrow point. A very low ratio of triangular Levallois-style cores [5.7%] that could have been used to produce flake points, as compared to other shapes of cores gives further evidence that stone arrow and spear points were not much used. To the extent that weaponry was required, whether for defence against predator, for hunting or for military purposes, the need may have been met by metal implements. Had hunting been a frequent or common activity,

much cheaper stone points would have been used.

Work in 2014 has added a little to our knowledge of another area of economic activity, the manufacture of ceramic wares, which also involved the use of stone tools, especially scraper-like pot-formers, various sizes of handstones, and pebble burnishers. To a certain extent, a distinction between handstones and burnishers is arbitrary, based as much as on the artefact's size as on its use. In addition to these rather abundant handstones, a few more examples have been recovered of relatively large, carefully shaped handstone/abraders that may have been used in the final shaping and polishing of carved stone objects or architecture or perhaps for finishing wooden planks.

It was noted in 2013 that a few stones with smooth, unscratched, slightly convex polished faces had not been used on unfired ceramics and were too large for vellum burnishers (Sernicola and Phillipson 2015). These somewhat resemble glass objects known as *slickers* or linen smoothers that were used by early Medieval people in northern Europe, sometimes in conjunction with a whale bone "board", to press and smooth linen fabric. Experiments conducted during the 2014 field season demonstrated that these stones used in conjunction with a smoothly-finished granitic basalt tablet of otherwise unknown purpose functioned very well and easily to press durable pleats into wet linen cloth which could then be allowed to dry naturally in the sun. The stones did not require to be heated for this purpose, but if sun-warmed they retained heat well and gave a smooth finish to the cloth. Since limited enquiries and research have elicited no convincing alternative evidence of how Egyptian and other ancient fabrics were pressed and pleated, this may be a significant finding. It also adds circumstantial evidence to that provided by a single fabric-impressed ceramic sherd found on the surface in 2010 and a few similarly impressed pre-Aksumite sherds from sites on Beta Giyorgis, that linen fabrics were a pre-Aksumite product.

New photographs were taken of a small pre-Aksumite mortar that the resident landowner continues to use to prepare her *mugogo* for baking *injera*, and of a similarly, but probably anciently, reused small mortar that was found on Beta Giyorgis.

Casual enquiries were made about the present-day acquisition of grindstones. These are, or were until recently, purchased from specialist quarrymen at Meder, near Merina, south of Seglamen, who know which stones to use and who shape them on all surfaces. When brought home, the purchaser takes about a day to dress and refine the actual grinding surface. Its quality is tested by grinding sorghum. We were also told that a large wooden mortar is used with a metal rod as a pestle for pulverising dried herbs or pepper, but with a wooden pole for de-husking teff, soft wheat or barley.

Some more general observations concerning the Seglamen knapped lithics may point the way to future areas of research. The first of these concerns the absence of significant differences between assemblages from the earlier and later phases of all trenches, with the exception of the upper levels of trench XV, where very little relevant material has been recovered. At the very least, this points to an almost unchanged agricultural and cattle-keeping economy since the site's first significant occupation and, probably, from the time of the earlier producers of what are here referred to as the patinated older series of artefacts. Without reliable absolute dates for this material, it is as yet difficult to draw further conclusions, except to note that elements of continuity in the production and use of stone tools has continued through the Aksumite and post-Aksumite periods into the 20th and even into the early 21st century in rural parts of northern Ethiopia. For this reason, a detailed systematic study of the tools and materials used in traditional agricultural and related occupations in northern Ethiopia would be a very worthwhile undertaking.

There is often a problem that the more information one has about a topic, the less clear and simple it becomes. This is certainly the case with respect to pre-Aksumite lithics. The results from Seglamen do not fully substantiate an earlier paradigm of several related pre-Aksumite lithic traditions influencing one another and collectively giving rise to the Aksumite. Except for a change in the predominant method of striking cores – from a rough Levallois-style to what might be called the Mai Agam style –there are few significant technological differences between pre-Aksumite and Aksumite lithics in the area encompassing Beta Giyorgis, Aksum and Seglamen. This lack of differentiation is probably ascribable to fundamental continuities of people, culture and economy. Based on a study of the lithics alone, there seems to be no

justification for distinguishing between the pre-Aksumite and the Aksumite periods.

Within the pre-Aksumite there are some minor differences that appear to be site- rather than time-specific. An example of this is in the production of obsidian components for the blades of composite harvesting knives: at Kidane Mehret, bipolar knapping produced Likanos flakes; snapped segments of larger blades were used at sites on Beeta Giyorgis; while rectangular Levallois-style flakes were preferred at Seglamen (Phillipson 2009).

However, at Seglamen, where we have the greatest amount of information, a few Likanos flakes have been recovered and also a few snapped blades. Similarly, some pre-Aksumite surface collections, including a small one from Hawlti, are characterised by the presence of larger flakes and cores than are found at most pre-Aksumite sites. At Seglamen, small cores, flakes and flake tools predominate by a large measure, but some larger pieces are also present. Several explanations ranging from personal preferences, activity variants and economic constraints to a mixing of peoples with slight differences - somewhat akin to domestic dialects - in the knapping traditions they learned from their families and neighbours, may be invoked to explain the presence of unusual elements in the Seglamen assemblages.

As a wealthy centre of economic trade and production and, probably, a religious centre Seglamen's core of permanent residents would have been augmented by immigrants and visitors, most of whom would have had habits of material culture that were similar but not necessarily identical to those of Seglamen's indigenes.

Geophysical prospection (A. Getaneh)

The geophysical survey conducted in 2014 at site SG 1 has been a free search intended to cover the whole site with the objective of locating intra-site anomalies of potential archaeological interest for more resolved magnetic and 3D electrical resistivity tomography investigation and also to assist placement of future excavation sites. The survey was conducted with magnetic and radiometric methods to locate intra-site anomaly zones.

Total field magnetic data were collected along 49 profile lines trending N-S at 5 m line spacing and 2 m point spacing (Fig. 13). Point Radiometric data were collected every 2 m along 27 of the profile lines established for magnetic survey.

The observed total field magnetic data were first corrected for the diurnal variation and then IGRF subtracted, pole reduced, and high-pass and analytic signal filtered with the *Oasis montaj* software to determine the residual total field magnetic anomaly. The residual total field anomaly map in figure 14 presents outline of major anomaly features of potential interest.

Generally, geophysical data images typically present a two/three dimensional representation of a complex sequence of archaeological events and natural conditions. Therefore, interpretation of geophysical data must be a cooperative process involving both geophysicists and archaeologists that are familiar with the specific cultural contexts of the site under investigation. The understanding of the geological background and geomorphology is also important and valuable for a complete interpretation of the results obtained.

At this preliminary step, interpretation rules are based mainly on the interpretation of magnetic anomalies comparable to the refilled excavations of graves and house foundations to give a synoptic view of such potential human cultural sources that help planning placement of further excavations. On the basis of close observation and interpretation of the acquired magnetic anomaly features, two sectors of possible archaeological interest in relatively large areas, the 'cemetery' and the 'residential area', have been recognized.

The sector labelled "cemetery" is characterised by low magnetic anomalies that may result from graves as burials produce voids in the magnetic field; high magnetic anomalies may correspond to high boulders of igneous rocks present in that area. These anomaly features are similar to those from refilled excavations of graves, RG, suggesting the possibility that the cemetery could extend further westwards.

The regular pattern of anomalies expected from buried structures in the residential area has not resulted in this preliminary test, probably due to large survey lines and station spacing. Larger error encored in locating survey stations from using a hand GPS might have also contributed to distort the shape of the anomaly image. However, the residential sector has several anomaly features of potential interest, labelled as PHF (potential house foundations) comparable to those shown at refilled

excavations, RHF. If test excavations conducted in the future at one of these anomalies will confirm that they represent archaeological contexts, then this interpretation can be extended to the other similar anomalies.

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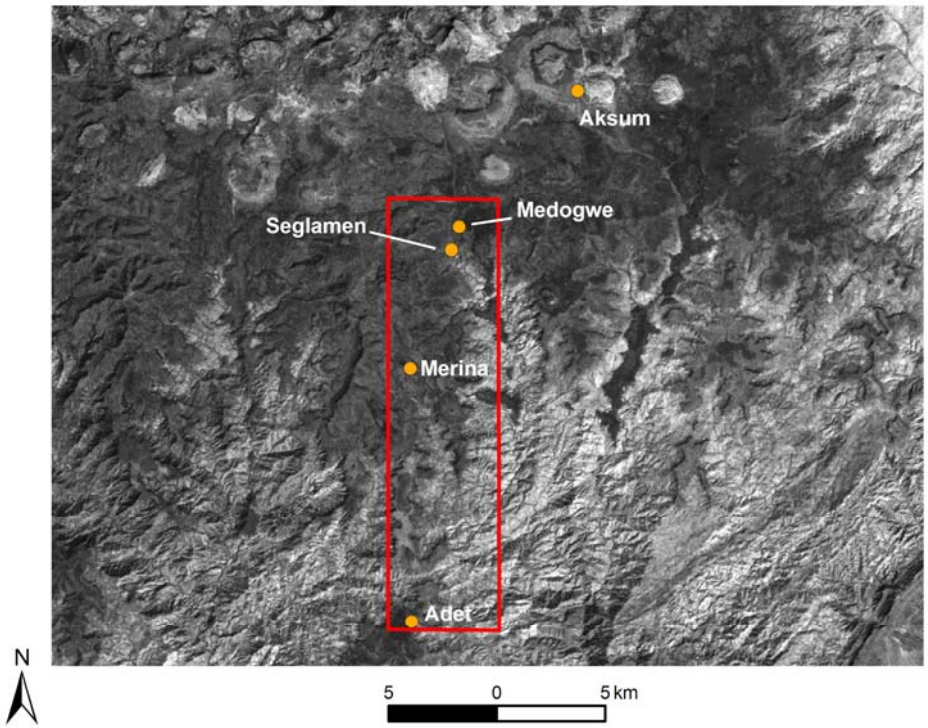

Fig. 1 - Map showing the UNO study-area

Fig. 2 - Chert flakes and cores from the lithic workshop at Medogwe

Fig. 3 - Chert flakes and cores from the lithic workshop at Medogwe

Fig. 4 - Seg XIV, SU 17, Tomb 12, clay model of a rural compound

Fig. 5 - Seg XV, SU 39 upper level, Black and Gray Ware with incised decoration

Fig. 6 - Seg XV, example of Black Ware from occupation level 2 in Room 1

Fig. 7 - Seg IX-X, white painted fg. from inter-phase II-III

Fig. 8 - Seg IX-X, Phase III, fg. with vertical grooving

Fig. 9 - Seg X, E3, SU 169, chert rectangular Levallois-style flake with knife-edge utilization on its left side

Fig. 10 - Base of a pre-Aksumite mortar presently reused to crush cotton seed and to spread the oily paste on a hot baking tray [*mugogo*]

Fig. 11 - A similarly utilized handstone [Seg XV, C4-C5, SU 39] attests to the long continuance of this style of food preparation

Fig. 12 - Seg XV, B3, SU33, obsidian backed crescent (left) and obsidian flake (right); note slight use-wear on their tips and heavy knife-edge utilization on their left margins. The crescent was finger-held; the fragment may have been hafted

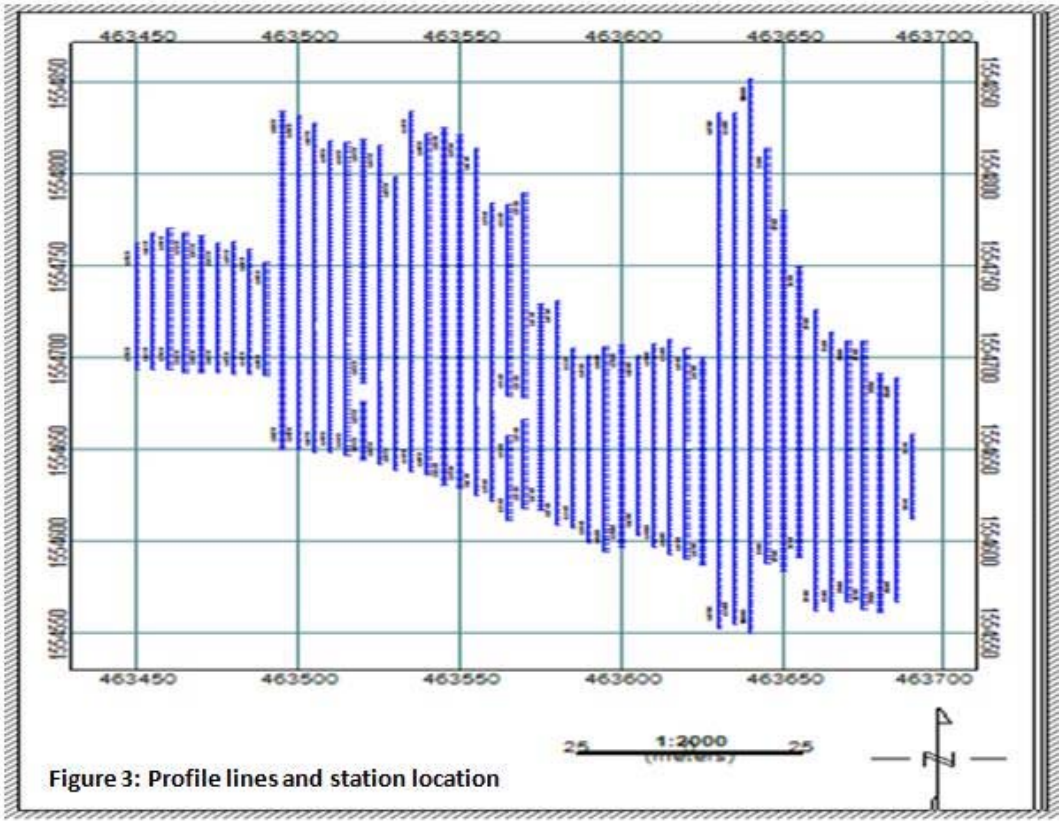

Fig. 13 - Geophysical survey, profile lines and station location

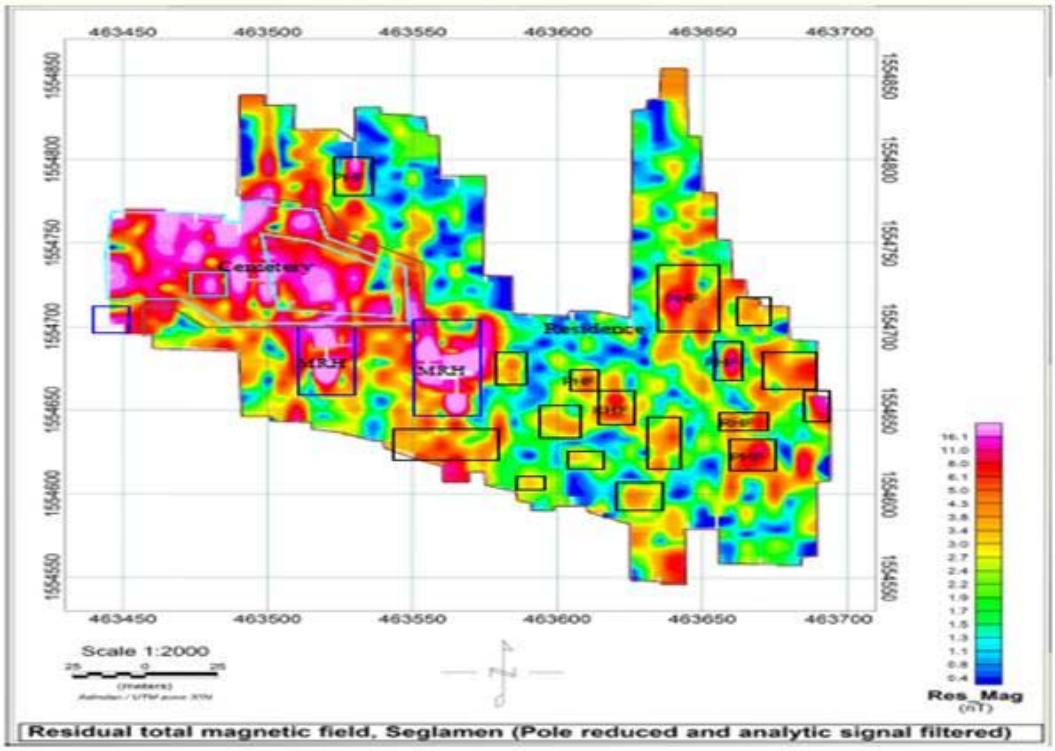

Fig. 14 - Geophysical survey, residual total magnetic field